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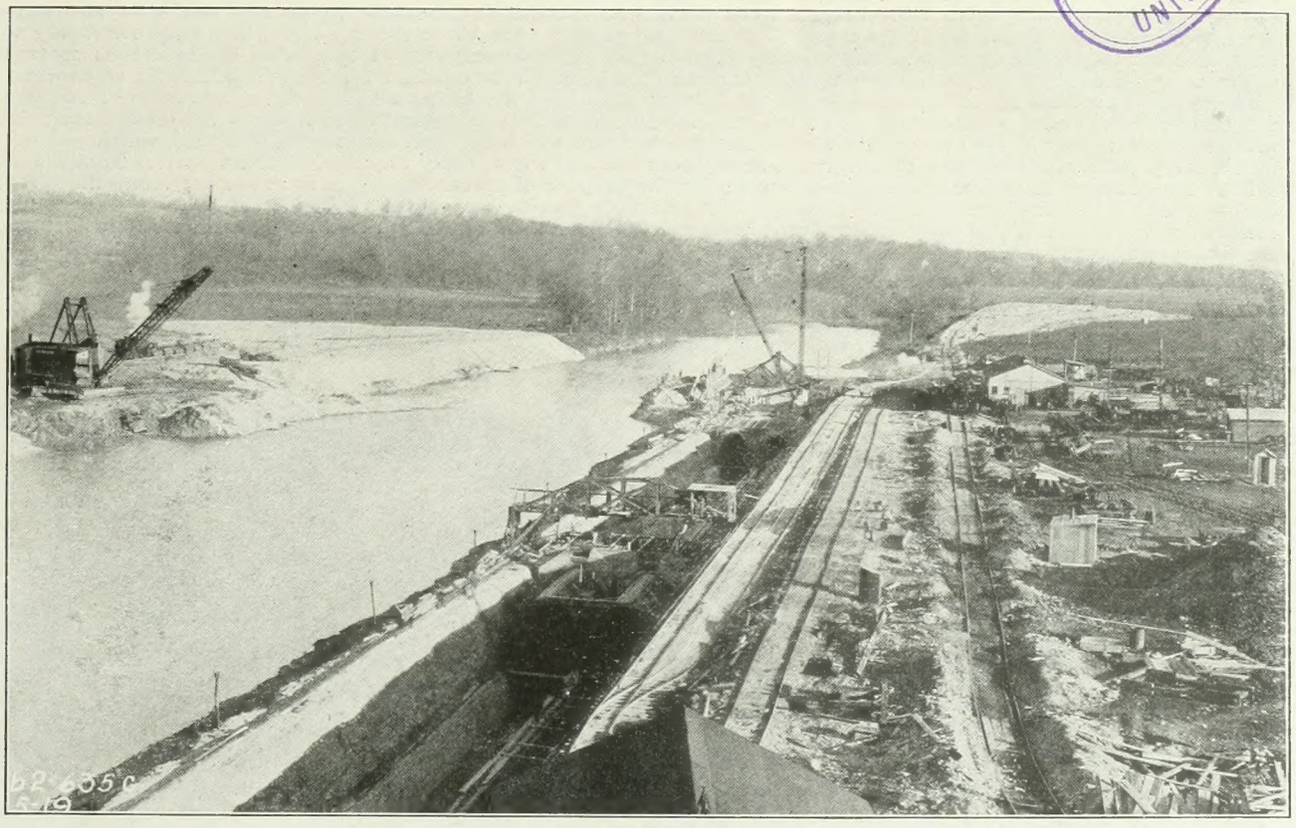

VIEW DOWNSTREAM FROM TOP OF ENGLEWOOD GRAVEL WASHER, FEB. 5, 1919.

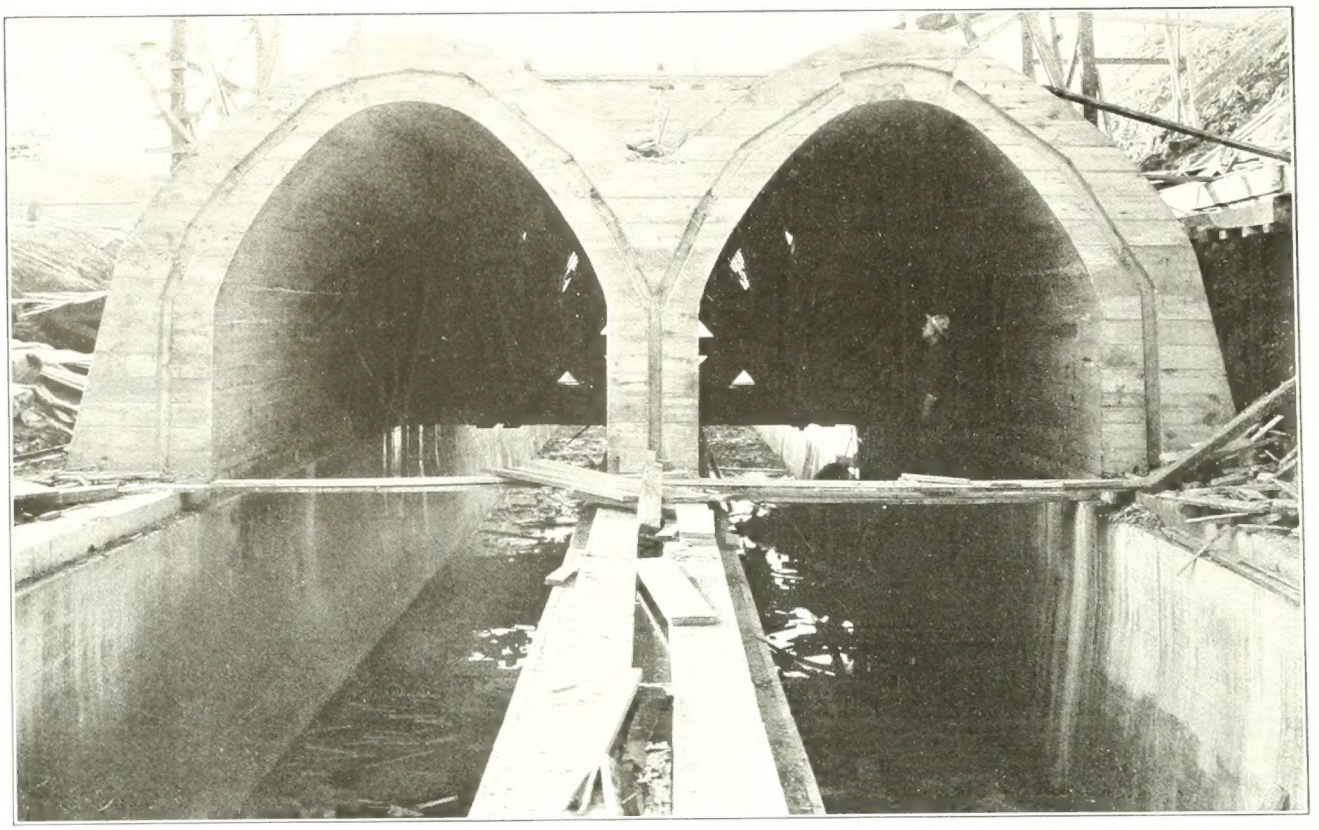

FIG. 103—CONCRETED SECTION OF THE OUTLET CONDUITS AT GERMANTOWN, JAN. 29, 1919.

This shows clearly the design of these conduits, two in number, which will pierce the base of the dam, permitting the water of Twin Creek to pass through to the valley below. The Cincinnatian rock which had to be excavated for them can be seen at the right of the lower part of the right-hand arch. The conduits are two in number so that if either one should suffer injury, or its lining become worn with time, it could be closed for repair and still leave an opening through the other for the water of the creek. The conduits as built have twice the capacity which they eventually will have, in order to provide ample waterway during construction against such rise of the water during floods as might sweep away portions of the partially completed earthen dam in which the conduits are buried. When the earth work is completed, the portions of both conduits below the level of the top of the center wall which appears in the foreground, will be filled with gravel and covered with a concrete floor, leaving the two upper halves to carry the creek water. The grooves which appear in the faces of the arches are keyways into which the next section of the arches, which will occupy the foreground, will lock, thus binding the two adjacent sections more firmly together. Collars project from the outside of the conduits at intervals along their length, for the purpose of preventing water from seeping along the smooth concrete exterior surfaces, when there is water in the retarding basin. There will be 96 feet of earth on top of these conduits at the center line of the dam, the walls being thickened as they approach this center line in order to withstand the increase of earth pressure.

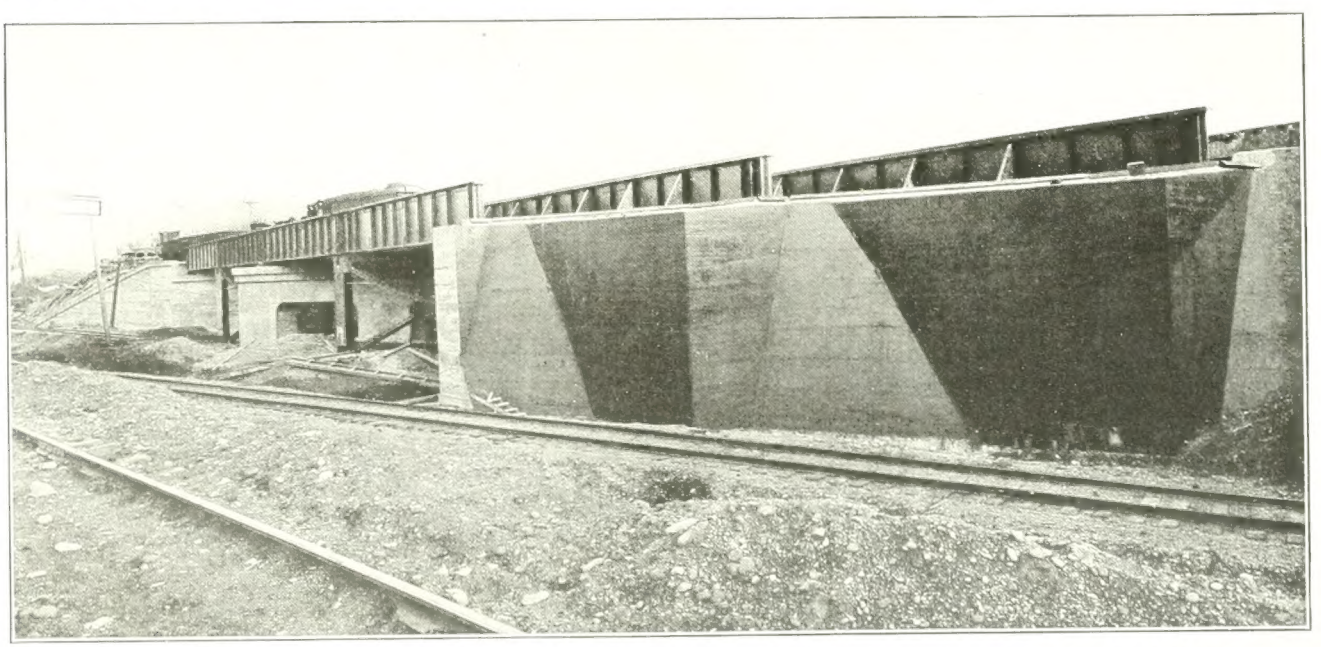

FIG. 104—UNDERPASS FOR HIGHWAY AND OHIO ELECTRIC UNDER ERIE AND BIG FOUR

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THE

MIAMI CONSERVANCY BULLETIN

PUBLISHED BY THE MIAMI CONSERVANCY DISTRICT

DAYTON, OHIO

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Subscription to the Bulletin is 50 cents per year. At news stands 5 cents per copy. Business letters should be sent to L. F. Wilcock, Assistant Engineer, Miami Conservancy District, Dayton, Ohio. Matter for publication should be sent to G. L. Teeple, Miami Conservancy District, Dayton, Ohio.

The Action of the Retarding Basins

The second of the articles concerning the Conservancy farm lands appears in the present issue. It has to do with the effects upon these lands of the retarding basins when they come into action in the future on the occasion of a flood. There has been a good deal of misunderstanding as to what this effect will be. Many have thought that the farms in these basins would be greatly deteriorated in value by the fact that owing to their situation they will be subject to flood. The article endeavors to make clear that this is not the case, and that on the contrary, the lands, when the necessary changes have been made to adapt them to the changed conditions, will be benefited by floods rather than injured. The fact that these lands will at no distant time be placed upon the market makes it necessary that the truth regarding this matter be emphasized.

War and Labor

The labor chart of the District, beginning with July 30 last and ending the middle of February, shows the effect on a construction project of the war demand for men in a most interesting way. The number of men on the pay roll ran steadily downhill as the men drained away into the army, down to the very week of the signing of the Armistice, when the curve immediately begins to rise again, and rises with slight fluctuations up into February where the record ends. It is hoped in the next Bulletin to present this curve with a further study of this matter.

The Work of the Winter

The present winter, now practically over, has been quite unusual in the progress it has permitted on the work. There have been only two or three days during the entire season of severe cold. Records of the past 47 years indicate in fact that the present season has been one of the mildest in that respect during that whole period. All departments of the work have been continued almost without interruption throughout the season. The concreting naturally has suffered more than any other department, but even here it is fair to say that there are not infrequent summer seasons when concreting is as much interfered with by rain as the Conservancy concreting has been interfered with in the past winter by cold weather. This being the first season when actual construction work has been in active progress, makes it seem particularly fortunate. Last winter, had construction work been on, would have been a very different story.

The Conservancy Electrical Equipment

The Bulletin begins in the present issue a series of several articles on the electrical equipment used in the District. The first has to do with the reason why electrical equipment was chosen for most of the work. For the material in this article, the editor is largely indebted to Barton M. Jones, Division Engineer at the Lockington Dam, whose experience with electrical equipment in connection with construction work made him the natural person to turn to in connection with this particular subject matter. One of

the other articles will take up the transmission line with its appurtenances, and the third some details of the installations at the various jobs. It is worth noting that the conditions which made electrical equipment most desirable in the Miami valley will obtain more and more throughout the entire country. These conditions were simply that electrical power, developed with great economy and reliability, was within easy reach of almost all points on the work. There can be little doubt that in the future high-power electric transmission lines will be extended all over the country, taking their energy from water power plants and high efficiency steam plants erected at the mouths of coal mines. The Conservancy District in this matter is simply following the natural line of engineering development.

Chief Engineer Morgan Returns

Chief Engineer Morgan has been taking a vacation with his family on the Gulf Coast. Most of it was spent at Biloxi, Mississippi and Fairhope, near Mobile, Alabama. He returned to his work on Washington's Birthday, February 22.

Self-Governing Camp Communities Again

It is interesting to note the attention which the self-governing camp community association at Taylorsville, noted in the January number of the Bulletin, has received from well-known publications. The "Engineering News Record" of January 30 devotes its first editorial to the subject, and later in the same issue gives a description of the Taylorsville scheme. The "Survey," in its issue of February 14, devotes a column and a half to the same theme. Both of these periodicals recognize the significance and value of the work which is being done at the Conservancy camps in the endeavor to better camp life, and in so doing, to better the work itself.

It is pleasant to be able to record in this connection that the value of such associations to the District has already begun to be demonstrated. At Taylorsville, the interest in the matter shows no signs of flagging. Any one who comes in contact with the officers of the association cannot help being impressed with their earnestness and enthusiasm in working out its program, nor fail to feel its wholesome reaction on the camp morale, although the latter was already excellent. At Englewood, where at first the idea did not seem to find much favor, the Riverside Community Association has been recently formed, which is developing the same pep exhibited at Taylorsville. Its organization differs somewhat from the other, principally in adding an Association Manager to the commission which heads the scheme at Taylorsville, the Association Manager corresponding to the City Manager in cities like Dayton. A brief discussion of the relative merits of the two systems, due to Arthur H. Kent, Camp Overseer at Englewood, will be found on page 126. A wholesome rivalry is being aroused at the two camps, both in this and in other matters, and it is going to be interesting to watch, during the coming season, the relative efficiency of the two systems as they work out. At Germantown also, the association went through initial difficulties. These have been now overcome, and Germantown will be heard from later in an interesting way.

Death of James J. Kirby

News came, in a recent letter to Chief Engineer Morgan from the young man's sister, of the death of James Kirby of Company B, in the 11th Engineers. This was the famous "fighting 11th," which saw such active service in France, and whose work is believed to make it unique in the history of warfare. Mr. Kirby enlisted in this volunteer regiment in May, 1917, and sailed with it for France in June of the same year. They were the first American outfit to get into real action. They were the engineers who fought the Germans at Cambrai in November of 1917 with picks and shovels, and Kirby was with them in that famous action. He had many narrow escapes while working in exposed positions in bridge building, railroad repair, and similar work, yet he came through without a scratch, to succumb to an attack of pneumonia while waiting near Bordeaux for transportation home. His death was unexpected, and came as a great shock to his family.

Mr. Kirby was educated in St. Joseph's College at Buffalo, and graduated in engineering from the University of Valparaiso, Indiana. He was City Engineer at Iron Mountain, Michigan; then with Stone and Webster at Los Angeles, California. Later he came with The Miami Conservancy District, and was with the District when he enlisted. His work was mostly in the field on Railway Relocation, in which he made an excellent record.

He was one of those men who make friends wherever they go, and this makes his loss the more deeply felt. He is survived by his parents, Mr. and Mrs. John Kirby of Lackawanna, New York, and by his two sisters, the Misses Margaret M. and Anna M. Kirby. The family have the warm sympathy of all Mr. Kirby's friends of the Conservancy District.

Hydraulic Fill Begins at Englewood

The work of hydraulic fill at the Englewood Dam was actively started on Monday, February 24, the dredge pumps beginning operations on that date. The Englewood layout is somewhat different in detail from that at Taylorsville, where the work has been in progress for some time. A comparison of the two is reserved for a later article in the Bulletin.

Doctors Take Notice

Following the report of the blacksmith at Lockington mending a broken leg (as reported in the August Bulletin) comes this from the same camp.

A three-year-old boy in camp sustained a broken leg and progressed favorably under the doctor's care. When it became necessary to remove the plaster cast, the doctor telephoned that he would like someone to do this for him, as his time was more than occupied with influenza cases. He explained how the cast should be cut and that a penknife should be used, adding that it was a most tedious task and would probably take two hours. One of the camp ladies volunteered for the job, and went to her husband for the pocket knife, explaining of course why she wanted it. The advantages of a pair of tinner's snips for such operations was pointed out, and with much skepticism on the part of the volunteer surgeon, they were tried. The operation was neatly performed in eleven minutes.

The Retarding Basins and the Conservancy Farm Lands

The Action of the Basins Will Be to Prevent Destructive Effects. The Deposits of Silt Will Be Highly Beneficial

We are accustomed to see, in wild or newly settled regions, large tracts of land thrown open to purchasers, but in old and thickly populated districts, like that of the Miami valley in Ohio, it is a very unusual circumstance. The valley has been settled for over 120 years. Its population, at the time of the last census 9 years ago, was over a million, and its large cities have increased 25 to 50 per cent in population since that time. Dayton now has 160,000 people; Hamilton has 40,000; Cincinnati, just outside the watershed, has 450,000. Facilities for traffic are excellent. Fourteen steam and electric roads enter the city of Dayton alone. It is one of the busiest manufacturing regions in America. The output of Dayton alone for the last year is estimated at over $200,000,000. The valley is also one of the most fertile and flourishing agricultural centers. In the midst of this district, there will soon be thrown open for purchase some 30,000 acres of land; not waste lands, nor lands which have been passed over because better were available, but lands among the richest and most fertile in the valley. It is, we say, a very unusual circumstance that farms of such a character, in so large a body, in such a region, should be thus thrown upon the market.

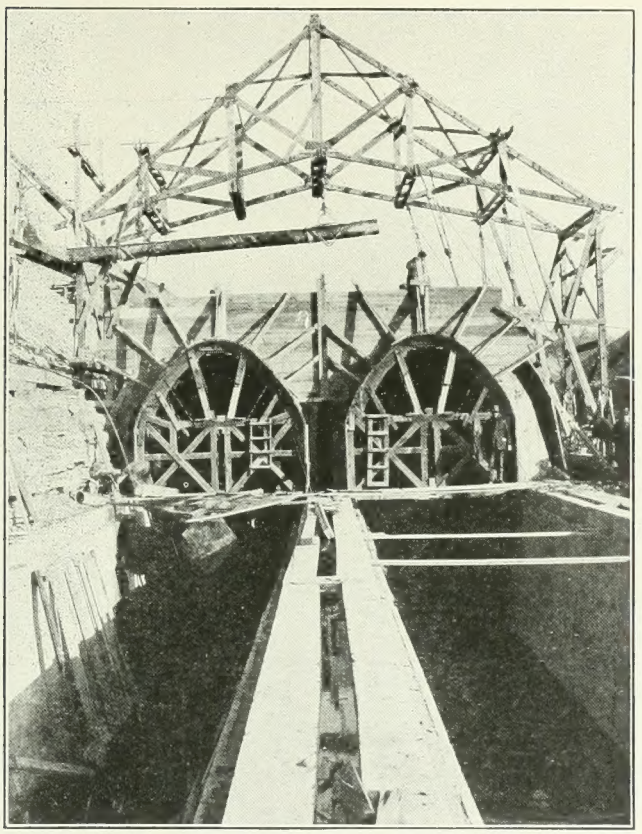


FIG. 105—CONDUITS AND TRAVELING TRUSS AT GERMANTOWN, JAN. 29, 1919.

The picture shows in more detail one of the traveling trusses referred to in Fig. 106. The truss is supported on vertical beams, as shown, these being carried on trucks with rollers which run on rails on the rock shelf on each side of the excavation. These rails, as shown, are at different elevations. The concreting chute appears slung from the truss by pulleys which permit its being lowered into place for action. The section, which runs up to the concreting track on the valley shelf, appears at the left (see Fig. 106). The truss is just now engaged in helping move the right-hand outer section of the concrete form for the right-hand arch, which may be seen standing away from the completed concrete, and supported above by ropes and pulleys, ready to be carried along by the truss to its new position further down the conduit where it will be used in concreting the next section. The method of bracing and supporting the interior arch forms appears clearly in the picture. These interior forms also move lengthwise on rollers down the conduit to be used in the next section of the work.

They are in fact the farm lands in the five retarding basins of the Conservancy District. The basins, during heavy floods, will be subject to overflow, endangering, in their present location, the farm houses along the river bottoms, and on that account, it became necessary for the District to purchase these farm lands. The buildings will be moved to ground up the valley slopes so as to be out of danger from submergence by floods. The farms will be redivided and re-adjusted to suit the relocated dwellings. The new farm houses will thus be entirely safe places in which to dwell. Floods cannot overflow them. Floods can, however, affect in greater or less degree the farm lands with which they are connected, and it becomes an interesting question to investigate just what this effect will be. What it has been in the past is well-known, but the construction of the dams and the operation of the retarding basins will introduce entirely new features. It is the effect of these new features which we must study.

There will be five of these great retarding basins, occupying, in each case, the richest valley bottom lands. At the lower end of each basin, built across from hill to hill, will stretch the dam, in length varying from 1,210 feet at Germantown to 6,400 feet at Lockington. Each dam is pierced at the base by a set of concrete conduits, two, or three, or four, in number. Except during seasons of flood, the retarding basins will be dry; as dry as they ever have been. To call them basins is indeed apt to be misleading. Except at the rare intervals referred to, they do not act as basins at all; they are just extensive river bottoms of very fertile and long-cultivated land. The stream winds through them from the valley above, and at the lower end, finds its outlet through the conduits at the base of the dam, which are built large enough to accommodate any ordinary stream flow, and even moderate freshets.

In times of flood, however, entirely new conditions will appear from any hitherto known. As the water rises in the river to the top of the banks, the conduits begin to flow full. As the river still rises, the conduits are unable to carry all the water which comes to them, being so proportioned that even when the basin is filled to maximum capacity they will only permit such volumes of water to pass as the river channel below can safely carry. When the water begins to come from the valley above faster than the conduits can carry it, the excess begins to back up and spread over the valley bottom immedi-

ately behind the dam. As the flood rises, it backs up farther, and spreads out wider, and becomes in fact a large pond with the river running into it at its upper end, and the conduits draining it through the dam at the lower. As the water rises still higher, the pond spreads up the valley and out along the slopes and grows into a lake. In the Englewood basin, during a flood similar to that of March, 1898, this lake would average nearly half a mile wide, would extend nine miles up the valley, and would cover 2,620 acres, or 4.1 square miles of land. At the dam, it would be 43 feet deep.

The behavior of the water in this lake is interesting. We think of a flood as something tempestuous and disastrous, but the lake would present no such appearance. The water level would rise very slowly, and the higher it got, the slower it would rise. The reason for the latter fact is evident. When the lake covers say 1,000 acres, to raise the level one foot higher would take a certain time, say 3 hours; when the lake covers twice the area, 2,000 acres, to raise the level of this double area one foot, assuming the rates of inflow and outflow to remain as before, would evidently require twice the time, or 6 hours.

As to damage, the farm buildings will be above the lake level beyond the water's reach. Moreover, the lake would present to the eye nothing stormy nor tumultuous. Quite on the contrary. It would look like any other lake with a rapid river running into it at its upper end. At the mouth of this river, as the water ran in, it would spread and slow down, until a few hundred feet out scarcely any current would be perceptible except that created by winds. At the foot of the lake, at the dam, it would be still calmer. Forty-three feet below the lake surface (supposing the case still at Englewood, and a flood equal to that of March, 1898) the water would be running swiftly and quietly into the conduit, but on the surface there would be simply a slow set toward the point of exit. The flood in fact, flowing in at the head of the lake, spreads and loses itself in the vast mass of water, its destructive speed entirely removed. Thus the action of the retarding basin is not only to protect the valley below the dam from the destructive effects of the flood, but also, barring the effect on crops of a summer flood (a rare occurrence), it will protect the area within the retarding basin itself. This will be made still clearer as the discussion proceeds.

The flood in the river above the lake will continue to rise until it reaches its highest point or "crest." Then it will begin to recede, but the lake

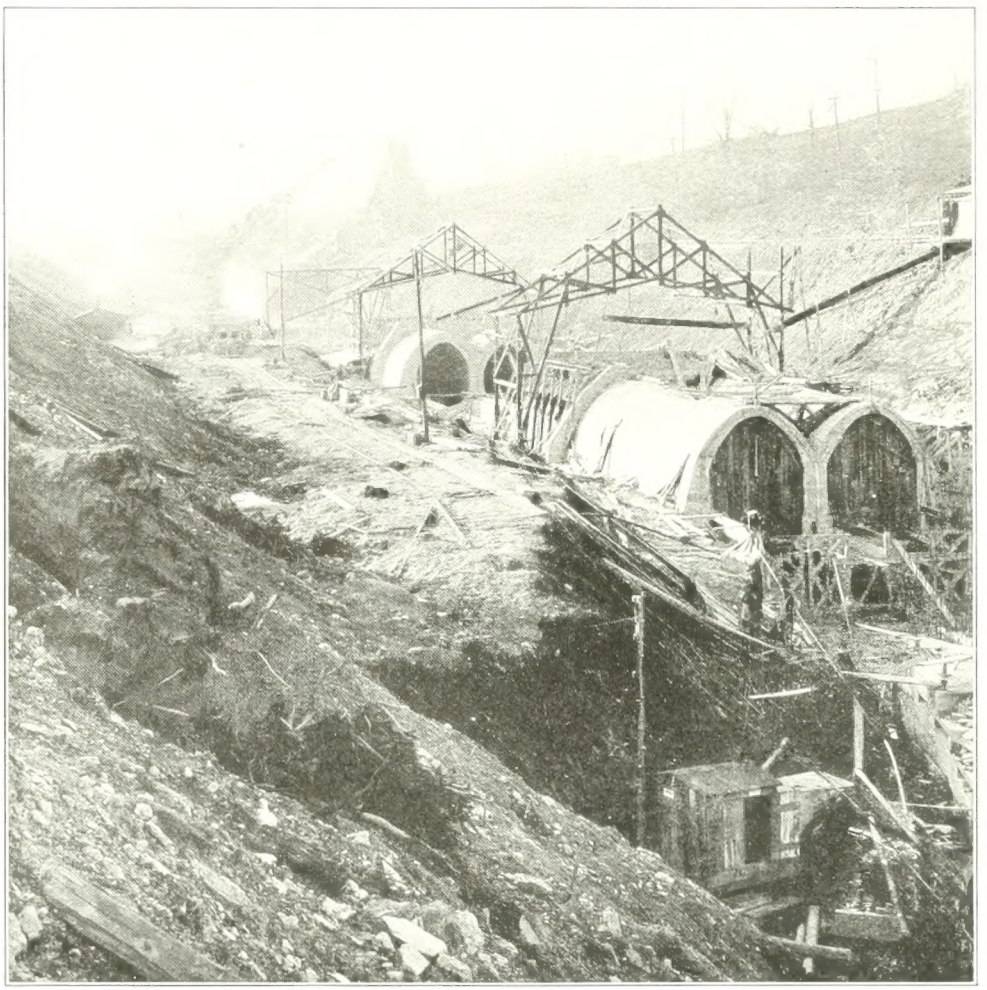


FIG. 106—ANOTHER VIEW OF THE CONDUIT STRUCTURE AT GERMANTOWN, JANUARY 29, 1919.

The view is up the valley. It should be compared with figures 103 and 105. The collars, there referred to, for preventing seepage of water, appear here very plainly, projecting in both the sections which are finished. Three of the concreting trusses appear; the first two of a broad A-shape, and the farther one in shape of a broad inverted A. These trusses are supported on timber legs which carry trucks at their lower ends, the wheels riding on steel rails laid on the shelf of rock on each side of the conduit excavation. These trusses can thus roll along the tracks to reach any point of excavation. They carry the concreting chutes. The slanting form of one of these chutes appears at the right-hand of the picture. A second section of the same chute appears hanging horizontally to the truss a little to the left of the other. The two sections are capable of being joined into one slanting chute. The concrete is mixed at the gravel washing plant which appears to the right of the dragline excavator in the distance. It is carried on a 3-foot gage track, built on a shelf cut in the slope which appears to the right of the excavation and above it, the cars being 1¼-yard hopper cars drawn by a 6-ton gasoline locomotive. The cars discharge the concrete into the upper end of the slanting chute. The chute, at its lower end, discharges into the concrete forms. The traveling trusses enable the chutes to discharge anywhere in the length of the conduit excavation. The dragline excavator in the distance is digging the trench for the upstream end of the conduits. The little house in the foreground contains an electric motor running a centrifugal pump. The two together constitute one of the portable outfits described in the last number of the Bulletin.

level for a short period will still rise. It will rise until the inflow from the river at the head of the lake equals the outflow through the dam conduits at its foot, when its level will become stationary. Then as the river flow diminishes to an amount less than the outflow from the basin, the lake level will begin to fall very slowly. It will continue to do so until the lake is emptied and entirely vanishes, and the river re-appears, reduced to its normal proportions, flowing quietly between its banks as before the flood.

The time occupied by the water in filling and emptying the lake described will vary with the particular flood and with the particular retarding basin. Consider the basin at Englewood under stress of a flood like that of March, 1898. (This flood is selected because it is typical of the heavier floods which visit the valley, the river at Dayton rising to a 19.7 stage, which was close to the top of the levees at that time.) At Englewood, with such a flood, it would take 2 days to fill the lake and 9 days to empty it. The lake at its maximum would be, as stated earlier, 43 feet deep and would cover 2,620 acres. It would be 40 feet deep or more, and cover 2,300 acres or more, for a period of nearly 3 days. It would be 30 feet deep or more, and cover 1,600 acres or more, for about 6½ days. It would be 20 feet deep or more, and cover 900 acres or more, for about 10 days. The depths given are those at the dam; going up the valley slopes these would, of course, decrease to nothing at all. At Taylorsville, with a March, 1898 flood, the conditions would be a little different. The water would again take about 2 days in rising, as at Englewood, but the basin would empty in about 2¾ days instead of 9. The lake at maximum would cover about the same area as at Englewood, 2,600 acres, but would be much shallower. For that reason, and also on account of the much larger conduit capacity at Taylorsville, it would drain more quickly.

It will be interesting to look at another effect of the lake of water which occupies a retarding basin during a heavy flood. We know that these rivers, in flood, always carry large quantities of silt; that is, mud, fine sand, and organic material, so fine that it remains suspended for a considerable time even after the water is poured into a tumbler, and will only very gradually settle to the bottom. This material is not deposited in a bar, but spreads with the water throughout the entire lake and slowly settles to the bottom. Since the lake lasts all the way from a day to two weeks in the basins before it is able to flow out through the conduits in the dams, practically all of this material is deposited on the valley bottoms. On the passing of the flood, it will usually be found covering, in a thin layer, all the overflowed fields. It is the material which Dayton residents will remember, deposited inches deep on carpets and furniture during the flood of 1913. The effect upon land of such a deposit is well established. It is one of the best fertilizers known. In the lower Mississippi valley, when a flood goes over the levees, the bottom lands outside of them are often greatly benefited.

Even where floods occur during the growing season, they are, in spite of the damage to the particular crop occupying the land at the time, in their net effect highly beneficial. This is clear from the evidence furnished by the retarding basins in France, where this means of flood prevention has been in use for a long period. These floods in France occur almost always in the autumn, in October, and they often do some damage to overflowed crops. Nevertheless, the value of these lands, as given by French authorities, is greater by $50 to $100 per acre than that of similar lands not overflowed. That is to say, in the French retarding basins, a flood, even an autumn flood, is considered a financial asset—it pays.

If this is true in a region where most of the floods work some injury to crops, it will be still more true in the retarding basins of the Miami valley where there will probably be little crop damage for the reason that summer floods in the valley, of a magnitude to work material damage, are exceedingly rare. There has been only one flood during the past twenty-five years—the flood of October, 1910—which was heavy enough to have worked crop injury extending any considerable distance above the dams, had they been in existence. All the other floods occurring during the growing season in that period—and there were only five of these—would have affected but a small area next the dams. In the 25 years considered, 80 per cent of the Miami valley floods would have brought land benefit to the basins without any accompanying crop damage whatever.

The result of our analysis, then, is to bring out the perhaps unexpected fact that once the farm buildings on these Conservancy lands have been moved, and the necessary re-arrangements made, the value of the lands will be greatly increased by the fact that they lie in the retarding basins and are subject to overflow. Far from being a detriment, once the changes are effected, floods will prove a benefit, and since these farms even hitherto have been among the most valuable in the Miami valley, their attractiveness as an investment, when they come into the market, ought to be great.

The Departure of A. D. Huff

A. D. Huff, Superintendent of Camp Construction, left the employ of the District on February 1, to accept a position with the United States Government as Superintendent of Building Construction at Wright Field. Mr. Huff entered the Conservancy service in February, 1918, and has been in charge of the building of the houses at all of the construction camps in the District. There are five of these construction camps. The buildings comprise cottages, messhalls, shops, offices, schoolhouses, and community houses, the total number exceeding 200. Mr. Huff carried through the erection of these buildings with efficiency and thoroughness, his work including the inspection of the plumbing and other fixtures as well as the carpenter work. With Mr. Huff's professional ability goes a character which has won the liking of everyone whom he met. His colleagues see him leave regretfully, and wish him every success in the new work he is undertaking.

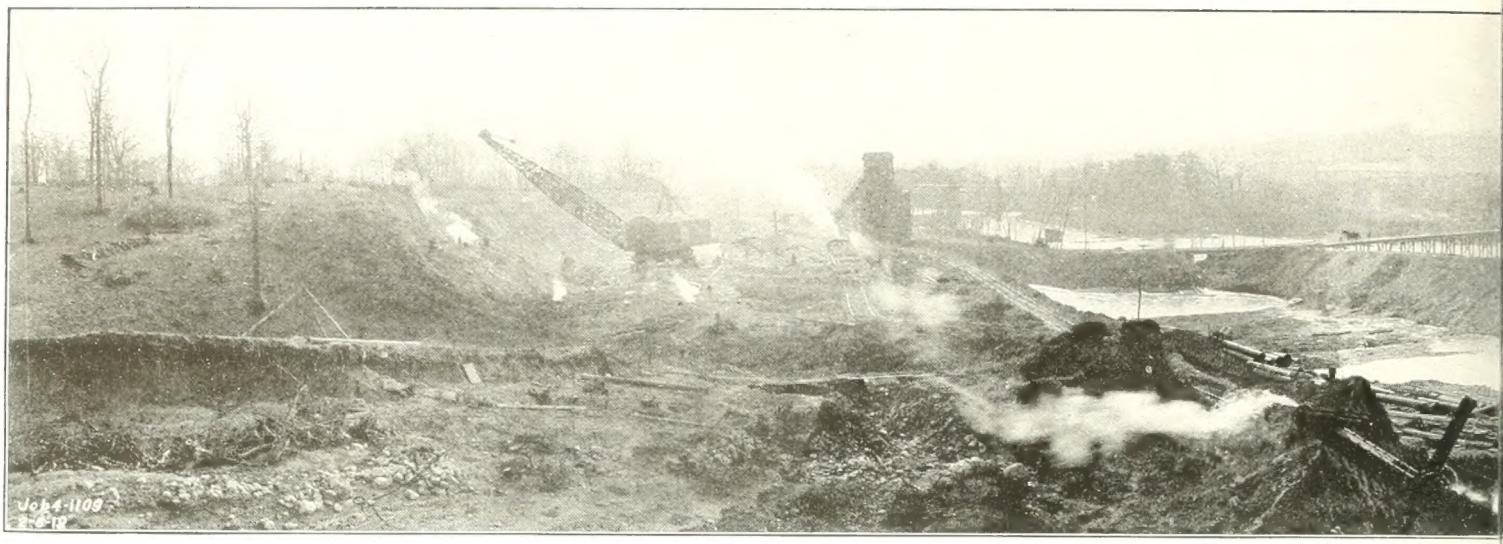


FIG. 107—PANORAMA OF THE WORK A

The view is looking toward the southwest, and down the valley of the Miami river. It shows all of the work except the excavation at the upper part of the outlet works, where the earth is being washed down by a hydraulic "giant" to be used in the hydraulic fill on top of the dam. The house at the river's edge at the extreme right is the pump house containing the high pressure and sluice line pumps for the hydraulic fill. The alternating current transformers, furnishing power to these pumps, may be seen beside the poles just to the left of the pump house. The two pipe lines may also be seen running from the pump house up to the trestle, and coming across the trestle close together side by side. One of these is the high pressure line of spiral steel pipe which supplies water to the giant, or water jet, which excavates the borrow pit. The other is a wood pipe line which supplies water at low pressure in large quantities to sluice the excavated material to the dredge pump, which is out of the picture to the right. The dredge pipe line, which carries the mixed earth and water to the dam, is the nearer of the two pipes seen at the extreme right of the picture. It passes under the railway track, then turns and crosses the trestle unseen (being out of sight underneath), but re-appears again across the river, turning to the left along the right bank. It turns again to the left of the dragline excavator and runs at right angles to the river along the south side of the hydraulic fill pool, which can be seen just beyond the excavator. It discharges into the pool a little to the left and beyond the dragline. In the pool, which is enclosed by four embankments as may be seen, the earth which is carried with the water through the dredge pipe, drops to the bottom, thus gradually building up the dam. The water from the pool returns into the river through the two pipes which may be seen just to the left and below

February Progress on the Work

GERMANTOWN

Due to the moderate weather conditions during the past month, concreting has been carried on as rapidly as the forms can be erected. Care has been taken to protect the concrete against frost. Nine arches, all the temporary floor sections, and all but one center and side wall section of the conduit have been completed.

The large dragline has moved down stream stripping the north bank of Twin Creek of all stumps and logs. A cross dam will then be built along the bank, confining the lower ten feet of the hydraulic fill to that portion of the main dam north of Twin Creek. The dragline has also lowered the water in that portion of the creek which passes through the dam, by deepening the channel just east of the down stream toe.

Excavation of the outlet channel has been started and is progressing satisfactorily.

Work has begun on the excavation for the "hog box" by teams. The earth and gravel from the borrow pits will be brought in cars, and dumped into the "hog box." It will be sluiced from this by "giants" into a screen which will sort out all stones over 7 inches in size. All under this will be carried into a sump or pit, whence it will be pumped by a dredge pump to the pool on the dam.

Clearing and grubbing of the hillside at the south end of the dam has been practically completed.

The sidewalks in the camp have been staked out and graveled recently, which adds greatly to the appearance of the camp.

There have been two deaths in camp during the month; those of Mr. Bernard Allen, and of Mrs. Wehrly, mother of the Camp Electrician.

A. L. Pauls, Division Engineer.

February 15, 1919.

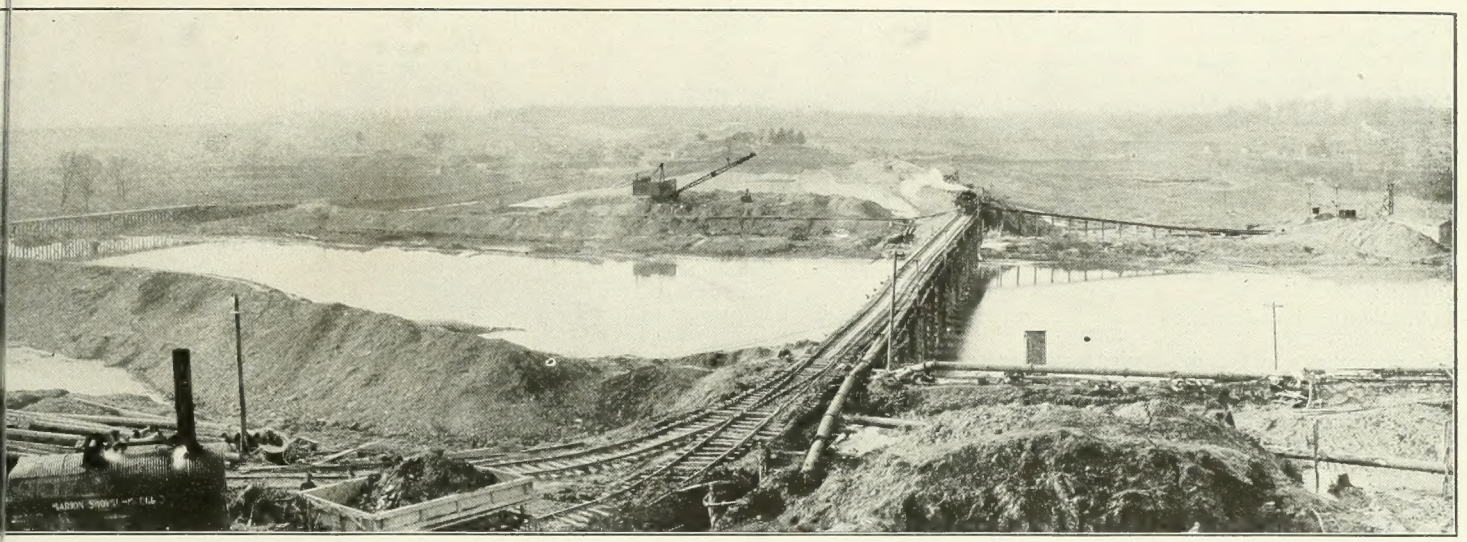
ENGLEWOOD

The concreting of the outlet conduit, upon which, to a large extent, depends the time of completion of the entire dam, is progressing favorably. The final operation, pouring the arch, is about 25 per cent completed. The entrance and outlet of the conduit will be concreted well within the time of finishing the arch.

The large dragline, engaged for several months past upon the work of cleaning out the river channel within the limits of the dam, has finished this operation and is moving into place to continue excavating the cut-off trench along the center line of the dam.

The cross dam, to enable hydraulic fill to begin before diverting the streamflow, has made marked progress through a season when, ordinarily, work of this nature is not to be expected.

About March 1 a beginning will be made on the hydraulic fill by means of the 15-inch dredge pumps. This



TAYLORSVILLE, FEBRUARY 6, 1919.

the locomotive on the trestle (see page 57 in the November Bulletin). The lower (further) trestle, carrying the construction railroad, connects the B. & O. Railroad, which runs on this side of the camp, seen in the distance across the valley over the dragline. It also carries a highway, connecting the camp with points east of the river. The tall building on the left bank of the river is the gravel washing plant, which will be used when the concrete work begins during the coming season. The large dragline excavator, to the left of the gravel washer, is digging out the Cincinnatian shale in preparation for the concrete outlet conduits, which will carry the Miami river through the dam after the latter is completed. The excavation must be carried much deeper than it shows at present at that point. This outlet structure at Taylorsville will be of great magnitude; its width, a little beyond the dragline excavator, exceeding 200 feet. The embankment forming the left bank of the river, between the two trestles, is an earth cofferdam, built to keep the river out of the conduit excavation at high water while the conduits are under construction. The material excavated by the big dragline excavator, last referred to, is carried on the railroad track in the foreground across the right-hand trestle and dumped along the embankment which extends beyond the trestle. This embankment will become an integral part of the dam. The upstream toe of the dam is marked by a low bank, which can be distinguished following the pole line wihch extends into the distance from the pump house at the right. The downstream toe may be seen following the further railroad track across the valley, a little to the right of it, and to the left of the hydraulic fill pool. The Marion Steam shovel, seen in the foreground near the center, is excavating for a new railroad track along the east side of the conduit excavation.

February Progress on the Work, continued

marks a distinct step in the construction calendar, starting, as it does, the real machinery for the steady completion of the dam.

H. S. R. McCurdy, Division Engineer.

February 15, 1919.

LOCKINGTON

During January, concrete was poured 18 days at an average rate of 140 cubic yards per day, the total for the month being 2,510 cubic yards. Of this, 147 cubic yards was stone placed as plums. The slackened progress during the month was due largely to the time required, on account of the cold weather, for the concrete to harden sufficiently to enable the forms to be removed. The concrete reached the full height of the dam, 80 feet above the floor of the entrance channel, on Saturday, February 1, when the west wall north of the center section was completed. On February 14, the east wall was completed. To date, 20,000 cubic yards of concrete has been placed.

On January 27, a night shift that has averaged 20 men commenced excavating rock for the hydraulic jump pool. It had been planned to do this excavating with the south derrick while there was no concreting going on during the cold weather, but as the continued concreting utilized the derrick, night work became necessary. The excavated rock will all be utilized. Select and waste rock are separated. The select is used for riprap or laid aside for placing in concrete. The waste will be used as riprap lining, three feet thick, for the east slope of the outlet channel, This lining, useful as a protection, will serve also as a convenient "waste bank" for the surplus rock from the excavation. About 3,500 cubic yards of the rock have been excavated.

The first cut of the outlet channel, on the east side, has been completed, bringing the total channel excavation to about 110,000 cubic yards. The two bridge abutments at the new site of the Buxton Pike bridge over the outlet channel are practically completed, the forms and concrete having been very successfully handled by the dragline. The pier will be built by the dragline when it again passes the point as it moves north excavating the west part of the channel.

Work has been started on the installation for placing the hydraulic fill. A forebay adjacent to the Miami and Erie Canal is being formed by building a small dam across a gulley. This will serve as a sump for the pumps furnishing water to the monitors. The sluice water will flow by gravity from this pool to the different parts of the borrow pit.

Electric power is now being obtained from the Millers Ford station of the Dayton Power & Light Co. at Dayton. The change-over from the Piqua service was made February 2.

B. M. Jones, Division Engineer.

February 17, 1919.

TAYLORSVILLE

The Lidgerwood dragline continues to be operated two shifts on the outlet channel excavation. This is now practically finished down to elevation 790. Two Cyclone well drills have been started at this elevation to drill down to mean low water level (764) so that the rock to this level may be shot and taken out before going deep enough to make pumping necessary.

The Marion Caterpillar dragline finished the ground sluice to the new location for the dredge pump. It has exchanged the dragline boom for a shovel boom and is now excavating for a new railroad track off the east end of trestle No. 2 and around the east side of the outlet channel.

At the new location for the dredge pump, the sump and pump foundation have been finished and all machinery and equipment installed. Sluicing was resumed on January 31. A better layout for the grizzlies was worked out for this location and two more 6-inch, high-pressure pumps have been installed so that now a 3-inch nozzle can be used instead of the 2-inch nozzle formerly used. This extra water from the nozzle is much better for cutting the hard blue clay that underlies most of the till at this location.

The south half of Road 13 has been completed. This gives an outlet now from our camp to the east.

An additional double house has been finished which completes all the buildings planned for our camp.

O. N. Floyd, Division Engineer.

February 17, 1919.

HUFFMAN

The excavation for the outlet works has been completed to grade from the upper end down to a point forty feet below the center line of the dam. At the present time this excavation is being removed at an average rate of 1,000 cubic yards per day. A total of 50,000 cubic yards has been excavated to date and placed in the fill for the relocation of the Big Four and Erie Railroads between Huffman and Dayton. This fill has been carried toward Dayton to a point about one-half mile east of Harshman.

It is expected that the placing of concrete in the outlet works will begin about March 1. Two electrically-driven, steel, stiff leg derricks have been erected to distribute this concrete; the cement warehouse has been filled, concrete tracks laid, a large stock of movable forms have been built, and the finishing touches are being put on the gravel washing plant.

The spreading of the material excavated from the cut-off trench has been completed from the Erie Railroad to the diversion channel. The dragline used on this work is now being moved to the borrow pit, where it will excavate gravel for the concrete in the outlet works.

C. C. Chambers, Division Engineer.

February 15, 1919.

RAILROAD RELOCATION

Baltimore & Ohio Railroad. The general contractors, Grant Smith and H. C. Kahl, and the sub-contractors, Condon & Smith, Vang Construction Co., and Kahl Construction Company, have five steam shovels in operation. The Vang Construction Company resumed operations with their shovel between Poplar Creek and Johnson Station after a shut-down of two months. Practically all the concrete work, and about 55 per cent of the grading, have been completed.

Big Four and Erie Railroads. The Walsh Construction Company excavated 36,000 cubic yards of material during the month of January in the big cut at Huffman Hill. They have about 50 per cent of the total of 33,000 cubic yards in the channel change at Harries completed. This material was handled with a small clam shell bucket, and must be handled again in order to put it in the adjoining railroad embankment. All of the temporary trestle for the fill at the west end of the big cut is completed.

Mr. George Condon as sub-contractor for the Walsh Construction Company has all the ties and rails distributed for the construction track on his work east of Fairfield. He is also constructing temporary trestles for the work south of Mud Run. Two steam shovels are expected to arrive on this work in the very near future. Frank H. Smith, Inc., have all of their concrete structures completed with the exception of the head-gates for the Dayton Hydraulic Company. They have the excavation almost completed. Mr. F. H. Sprague has all of his concrete structures completed with the exception of a few headwalls on the pipe culverts. He is now excavating the channel change at Mud Run. The steel superstructure of the under-pass just west of the Huffman Dam is completed.

The grading is about 65 per cent completed.

Albert Larsen, Division Engineer.

February 17, 1919.

HAMILTON

The Class 14 Bucyrus dragline, after spending several weeks at the shop, has moved to the north end of town and commenced work on the levees along the north spoil bank. These levees will form the banks for the head-race of the new power plant of the Hamilton Rossville Hydraulic Co.

The Class 24 electric dragline has reached a point opposite the spoil bank and is loading material on dump cars. The hauling equipment consists of three 40-ton American locomotives and thirty 12-yard Western dump cars.

The total amount of material excavated to date by the two draglines is 346,000 cubic yards, 294,000 cubic yards of which is channel excavation and the remainder taken from borrow pits for railway embankment. Of this amount 260,000 cubic yards was excavated by the Class 24 machine. These figures do not include any second handling of material.

Good progress has been made on the Buckeye Street sewer, the job being now 75 per cent completed. The total length of completed sewer is 1,325 feet.

Work is being continued on the relocated Black Street. Part of the water mains have been laid and all of the brick has been removed from the old street.

C. H. Eiffert, Division Engineer.

February 17, 1919.

DAYTON

The main channel excavation to date amounts to 290,000 cubic yards. The large excavating machines have moved, including the material handled more than once, a total of 454,000 cubic yards. Machine No. 789 has completed the main excavation of Mad River below Webster Street Bridge, and all of the new south bank except the portion near the bridge. No. 790 has completed the new west bank of Miami River from Herman Avenue south to Station 56, near the end of Emmet Avenue.

McWilliams Northern Dredging Company has completed its machine work on Contract 41, and is continuing with teams and scrapers. Fifty-five thousand cubic yards of levee embankment have been placed on this contract.

The steam tug was launched January 5. The boiler and the electric wiring are now being installed. Plans are being made for a 30 by 68-foot scow on which to mount the caterpillar dragline machine, whose erection is just being completed at Herman Avenue.

Ten 4-yard dump cars and two 6-ton gasoline locomotives have been received for distributing material on levee enlargement work along tree-lined banks.

C. A. Bock, Division Engineer.

February 15, 1919.

RIVER AND WEATHER CONDITIONS

The river and weather conditions during the month of January continued to be favorable for construction progress. The temperature was above normal, the precipitation below normal, and there were no rises of importance in the various streams of the valley. With the exception of January 3 and 4, when the minimum temperatures at the Dayton Weather Bureau station were 2 degrees and 1 degree above zero, respectively, the temperatures were not low enough to affect the operations. The average for the month at the Dayton station was 34.4 degrees, or 4.8 degrees above normal.

The total precipitation during the month, at the District's stations, varied from about a half an inch to about an inch and a half. At the Dayton Weather Bureau station, the total was 0.97, or 2.04 inches less than normal. There were only three days during the month on which there was a precipitation of .01 of an inch or more. At the Dayton station there were 12 clear days, 12 partly cloudy days, and 7 cloudy days; the average wind velocity was 10.4 miles per hour, the prevailing direction being from the southwest; and the maximum velocity for five minutes was 33 miles per hour, from the north.

Ivan E. Houk, District Forecaster.

February 21, 1919.

Why Electrical Equipment Was Chosen for Conservancy Work

Cheap and Reliable Electrical Power Was Available. Electric Motors Have Advantages of Simplicity and Efficiency

The question of the source of power to be used on the construction work of the District was an important one. Work was to be done at a number of different points, some of them widely separated. The work would be heavy and would require energy in large quantities, totaling upwards of 8,000 horse power. The applications of the power would be of great variety. There would be the large dragline excavators, taking several hundred horse power each. There would be pumps for various purposes and of a great variety of sizes, up to one taking several hundred horse power. There must be power for gravel washers, concrete mixers, air compressors, wagon drills, shops, derricks, and for electric lighting. At the various camps, there would be also a number of the smaller domestic uses for which power would be a convenience. Altogether, more than twenty different applications could be counted where power would be necessary.

To provide for these various uses, the power evidently should be adaptable, reliable, economical, and efficient. The sources considered were steam, gasoline, and electricity, and a comparison of these was made before any equipment was purchased. Electrical power is available in the Miami valley where it can be easily brought to any of the construction centers. It is generated in large quantities, which make it economical. Due to the fact that the electrical transmission lines are fed from currents from many interlocking dynamos the power would be highly reliable, since if one generator breaks down for any reason, others will still be available. Electric motors such as would tap the power from the transmission line have been highly perfected in reliability and economy. Moreover, when of the "induction" type, as most of those needed could be, they do not require skilled attention. Once connected up, they can be left largely to themselves, not needing even to be oiled except at infrequent intervals.

To make a direct, concrete comparison, suppose a steam dragline using coal. The fuel must be used with a boiler and engine of small size and efficiency when compared with the boilers and steam turbines of large central plants supplying electrical generators. Coal must be hauled over rough and muddy ground to a machine working away from roads. A fireman must be employed to stoke the furnace. Contrast with this, an electric dragline which employs no fireman, and to which the energy comes, not over rough roads in carts, but through the air on wires, available at any instant.

Or, contrast electric and steam power as applied to centrifugal pumps, of which dozens of many sizes are in use in the District. Centrifugal pumps may be given a very high rotative speed. At this high

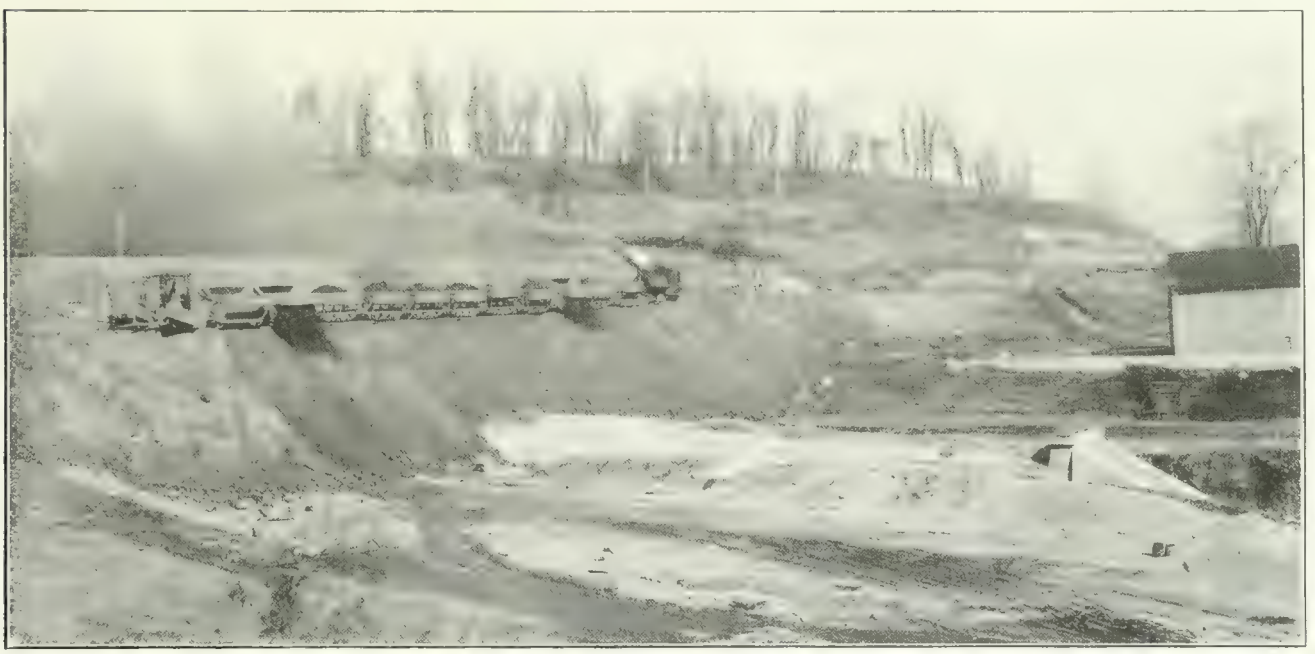


FIG. 108—CONCRETE CULVERT ON RELOCATED B. & O. R. R., TAYLORSVILLE, FEB. 18, 1919.

This culvert is 8 feet in diameter and 273 feet long. It will extend under the new railway track and under both levees just above the west end of the Taylorsville dam. The level of the new railway, which passes through the west end of the dam, is about 17 feet below the top of it at this point. The dam is therefore extended toward the north alongside the railroad in two levees (which will thus become virtually a part of the dam) until higher ground is reached on the west side of the track. The western levee can be seen over the dump-car train in the picture, extending toward the hill in the distance, where it stops. In case an extreme flood should make it necessary, these two levees will be joined at their upstream ends by a short cross levee which can be quickly built across the track, thus temporarily blocking traffic, but saving the country below the dam from being flooded by water running along the tracks. So extreme a flood will probably never occur. It would be much more severe than that of 1913.

speed, a small sized pump will do the same amount of work that a much larger pump would do running more slowly. A high speed electric motor is perfectly adapted to running such a high speed pump. The two can be mounted on the same base, and rotate on the same steel driving shaft, forming an exceedingly compact piece of apparatus. "With this compact unit, contrast an equivalent outfit consisting of a steam engine, a boiler, a pile of coal, a water tank, a driving belt, a large slow running pump, a special attendant, and more than all, a coal bill hard to forget."

Consider that one item of coal. The District would need, as stated, coal burning apparatus totaling 8,000 horse power, broken up into dozens of units, scattered over a wide area, to points some of them over seventy miles apart, and running in the aggregate hundreds of machines. Consider the cost of transportation of the coal to all these units, over railroads, roads and rough ground, requiring to be loaded or unloaded from cars into piles, from piles into wagons or trucks, from wagons again into piles, and again from piles into draglines or bins. Contrast with this the instantaneous transmission through wires of electric power, available at any hour of the day or night by the mere throwing of a switch.

Consider the relative amounts of coal burned; in the one case under a multitude of comparatively small, inefficient boilers, subjected to rough construction conditions, through winter weather, attended by many men of average skill; in the other case burned under a few large, efficient boilers, protected from the weather, attended by a few men of high skill, and producing power economically by means of steam turbines.

Next to the coal the matter of skilled attendants is probably most important. Each one of the steam units, as has just been said, would require a skilled operative. There would be dozens of these. With electric motors, to pump, as has been noted, very little attention, many of these skilled men can be dispensed with, with a corresponding saving in cost.

The matter of lighting is also important. At every camp light of some kind is required. On jobs of magnitude, like those of the District, electric lighting is preferable both in economy and convenience. With steam apparatus, an electric generator would have to be installed at each job. With electric power from a large central station, the lights could be tapped from the transmission line in the usual manner. The superiority of the latter scheme will be evident.

A summation of the points which have been stated will make reasonably clear the great superiority, everything considered, of electrical over steam equipment for most of the work of the District. A decision between the two was in fact easy to make. As between gasoline and electricity, many of the considerations already urged in favor of the latter also apply, especially in the matters of easy portability, reliability, simplicity, and promptness to [illegible] [illegible] [illegible]

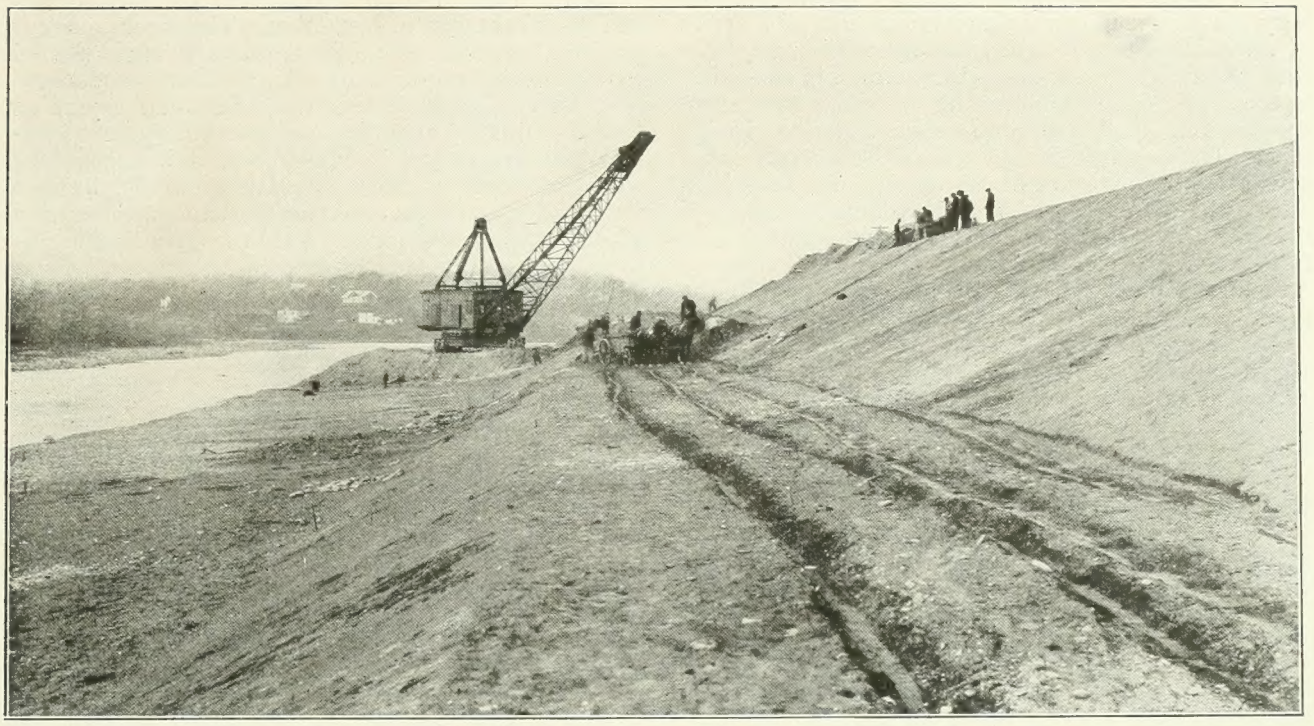


FIG. 109—FINISHING THE LEVEE AT HAMILTON, FEB. 7, 1919.

The levee appears at the right. It is built of material excavated from the river bed at the left by the dragline excavator, which is seen at work. The team is standing on the original level of the river bank on a "berm" or shelf, which has been left between the slope of the levee and the slope of the bank below. The team is hauling top soil material to be spread on the levee slopes. These latter will be sown to grass, both for appearance and to save the slopes from washing. The top soil had previously been deposited by the dragline in piles, as seen, in places where an excess of such material was available. The view is up stream at a point a mile or more south of Hamilton. The dragline seen is now at work opposite the lower end of the city, loading material into cars which will haul it to be dumped for fill in the low ground in Peck's Addition.

whatever to the power line. The coils wound on the poles of the ring are connected to the power line by 3 wires. Turn the current into such a motor and the iron drum begins to rotate, furnishing power to any machine with which it is connected. Mechanically such a motor is extremely simple. Electro-magnetically, extremely complex things are taking place. Three overlapping electro-magnetic waves, corresponding to those of the 3-phase, 60-cycle current spoken of above, are vibrating in the iron of the ring. What is remarkable is that their net effect is to produce a succession of powerful magnetic waves, which instead of vibrating back and forth, in the ring, pursue each other around it steadily in one direction at a speed corresponding mathematically to the 60-cycles per second and the number of projecting "poles" on the inside of the ring. An equal number of similar magnetic waves pursue each other around the outer part of the drum, dragging the drum with them, in a vain attempt to catch the waves in the ring. It should be added that these magnetic waves, invisible and intangible though they are, are extremely powerful realities, developing energy in large motors equal to that of hundreds of horses.

The points to be emphasized in these induction motors is their extreme simplicity of mechanical construction, their simplicity and reliability in operation and the further fact that, owing to their simplicity of construction, they can be subjected to rough handling by unskilled labor on the construction work with very little liability to injury. It is this type of motor which is in very large use all over the District, in size ranging from a little machine you could put in your hat to one weighing tons and delivering several hundred horse power.

An induction motor runs at very nearly constant speed, however the load may vary, the speed variation running from 2 per cent in the large sizes to 8 per cent in the smaller. It has one disadvantage in that it takes 3 to 4 times its full-load current in getting started. This drops momentarily the electrical pressure in the mains where large sizes are used; thus dropping momentarily the power delivered to other lights or motors on the circuit. Slight modifications in the design are introduced in large sizes to obviate this difficulty. These constant speed motors of the "squirrel cage" type, (so called because of the arrangement of the copper conductors in the rotating drum) are used to operate all the Conservancy equipment except the draglines, derrick hoists, wagon drills, and dredge pumps. For these machines variable speed is necessary, and variable speed motors are used of the "slip ring" pattern.

The motors for the dredge pumps presented a special problem. These pumps, it will be remembered, are heavy centrifugal machines which pump sand, mud, or gravel, mixed with water, from the borrow pit to the hydraulic fill on top of the dam. As the work progresses and the dam becomes higher, the head against which the dredge pump must work constantly increases. The total increase may be 30 to 40 feet, greatly increasing the force to be exerted

by the pump. A centrifugal pump, which is also a very simple piece of machinery, consists of a series of curved paddles rotating rapidly within a hollow iron shell. The material to be pumped is sucked in at the center of the shell by the rotating paddles and thrown out at the circumference into the dredge pipe. The paddles do not touch the outside shell, so that as the pressure in the dredge pipe increases, due to the increasing head at the dam, the speed of the paddles must be increased correspondingly to force the water into the dredge pipe against this increasing head. Thus the speed of the pump, and the speed of the motor which runs it, must vary.

To secure this variable speed, either "slip ring," alternating current motors may be used, or direct current motors; and since the amount of work to be done by these dredge pumps at the 5 dams will be very great, totaling 8,000,000 cubic yards of earth, mixed with from 5 to 10 times that quantity of water, to be pumped from the borrow pits to the dams, a careful comparison of the direct and alternating current systems for this purpose became necessary.

In first cost the direct current motor exceeds the alternating. Also, since it must be fed from alternating current mains, additional apparatus in the shape of a set of special transformers and a rotary converter would have to be purchased to "rectify" the current from the mains. On the other hand, the direct current motor, at the reduced speeds necessary during much of the pumping, is more economical than the alternating. Comparing the higher first cost and the lower operating cost in the one case, with the lower first cost and higher operating cost in the other, it was found that they broke about even.

This reduced the comparison to the advantages and disadvantages in operation. The direct current machine is more complex, requires a more skilled attendant, and requires also the additional apparatus referred to. Each piece of this additional apparatus added a link to the chain of machinery, a breakdown at any point in which would interrupt the work, at cost of direct time and money, besides time and money involved in possible interruption of other work connected with the same job. All these considerations pointed to the use of alternating current motors.

For dredge pumps of the sizes to be used by the District (using 350 to 500 horse power) motors making about 350 to 500 revolutions per minute are considered to embody the best practice. Alternating current motors of the slip ring, direct-connected, induction pattern, and of the speed mentioned, were accordingly selected.

In the purchase of the equipment, two principles, in addition to those already considered, were held constantly in mind. One had reference to the salvage value of the equipment when the work for which it was purchased should be completed. Sizes and kinds were obtained which would bring the largest figure when placed on sale at that time.

The second consideration required that standard makes and sizes should be bought, permitting interchange in case of breakage during operation. By using the same makes and sizes on all the jobs, fewer spare parts would need to be carried. An entire machine, if necessary, could be transported by truck from one job to another for an emergency. Following these principles, the highest economy during construction has been secured.

Englewood Versus Taylorsville on Camp Organization

To the Taylorsville Camp belongs the credit for initiating the movement toward self-government in the construction camps of the District, but to the Englewood Camp goes the credit for improving upon the Taylorsville plan; so at least the residents of Englewood believe. Of course, the relative value of the two organizations will depend more upon the vigor, wisdom, and aggressiveness with which their respective constitutions are put into effect than upon the forms of the constitutions themselves, but nevertheless the form is very important. It should be both interesting and helpful to other camps, which may be contemplating organization along these lines to make a comparison, and to point out wherein the Riverside Community Association believes its constitution to be the better-drawn and more workable document.

There are several important and fundamental differences and a number of minor ones. The Riverside Constitution is considerable the longer of the two, but for that reason it has been possible to make it more clear and definite. Both constitutions incorporate the "Commission" idea, but the Riverside plan includes the "Association Manager" feature. At Taylorsville all the authority and responsibility is centered in the Commission, which is thus obliged to handle all the detail work of the Association, its only assistance coming from certain committees which are appointed. At Riverside the Commission is directly responsible for the proper administration of camp affairs, but it has the assistance of an Association Manager, who, in this case, is also Camp Overseer, and who is able to devote a portion of his time to the work of the Association and to carrying the policies of the Commission into effect. The Association Manager is authorized by the constitution to appoint directors and through them, committees, to assist him in his work.

The Riverside Association feels that this plan has several advantages. In the first place it affords an opportunity to a large number of members to take an active and responsible part in the direction of Association affairs. This is done without in any way infringing upon the authority of the Commission or limiting its power. The Commission is responsible to the electorate for the proper performance of the duties of its subordinates, and it is authorized to direct their activities. It is relieved, however, from the greater part of the detail work and is enabled to direct its attention to the solution of the more important camp problems.

Again it must be recognized that the proper administration of the various activities of an association requires a large amount of time on the part of the officers. To put the whole load upon the Com-

mission seemed likely to work an unnecessary hardship upon its members and to demand more time than they could properly give. The Riverside plan guards against this.

At Taylorsville a member of the Association must be a resident of the Camp for three months before becoming eligible for election to the office of commissioner. The Englewood people hold that there are men who become better acquainted with Community problems within a month than other men would in six months and who, because of livelier interest and enthusiasm and greater natural aptitude, would be better fitted for election as commissioner. Under the changing conditions of employment and residence at construction camps it would seem that fitness alone should be the determining factor in the election of commissioners, as is the case in the Riverside Association, and the period of residence at the camp is of little importance.

The entrance fees and dues of the two Associations are the same, but the dues at Riverside are payable yearly in advance. This obviates the trouble and work of frequent collection of dues. A provision is made, however, that any person becoming a member after six months of any fiscal year shall have expired shall pay only one-half the dues for that fiscal year.

The other chief feature of the Riverside constitution which is not incorporated in the Taylorsville constitution is the Recall. The Recall provides an easy and convenient method of getting rid of a commissioner or commissioners who are guilty of negligence or inefficiency in the performance of their duties, while at the same time the percentage of the membership of the Association (two-thirds) which must petition for recall in order to make it effective, safeguards any commissioner against unfair or unjust treatment. It is doubtful whether it will ever be necessary to invoke this provision, but the presence of it in the constitution is sure to enhance the commissioners' sense of responsibility to the membership of the Association.

Arthur H. Kent,
Camp Overseer, Englewood Camp.

The Work at Englewood

(See picture on outside front cover)

The dragline excavator at the left is removing stumps, logs and all other undesirable material from the river bottom and bank so that they may not be included in the structure of the dam. These materials are hauled off the damsite by the construction trains behind the excavator. The concrete conduits appear in the middle of the picture in process of construction. They are very similar to the Germantown conduits described under figure 106. Two of the traveling trusses there described appear in the picture. Beyond the further one appears the boom and mast of a derrick used for depositing concrete in the forms for the outlet structure. This outlet structure is too wide to permit the use of slanting chutes like those described under figure 106. The left-hand railroad track in the foreground (3-foot gage) carries the concrete cars. The other two are standard gage, for carrying machinery, cement, and other materials. The roof of the cement shed is in the immediate foreground. The building to the right is a blacksmith, carpenter and machine shop. It is expected to finish the conduits early in the coming summer, but the river will not be turned into them until the following season.

C. F. Boardman, Chief Engineer of the Lackawanna Steel Co., visited the Conservancy work on February 14, and found naturally many points of interest.

Mrs. Laura H. Warner, file clerk and stenographer in the Office Engineer's office, resigned on January 31, in order to rejoin her husband upon the latter's return from the war. Mrs. Warner started work in the Engineering Department in October, 1917, having been transferred from the Appraisal Department, where she had been employed for nearly a year. All who came in daily contact with her learned to appreciate her as a most earnest and accurate worker, and will much regret her departure.

Taylorsville Loses A. O. Aulabaugh

A. O. Aulabaugh, Camp Overseer at Taylorsville, left the employ of the District a few weeks ago. Mr. Aulabaugh began his work with the Conservancy on June 19, 1918, in order to get work which would take him out of doors. Mr. Alabaugh brought to the work of camp organization at Taylorsville an experience and ability, which enabled him to carry out his work with unusual success. He is going into business for himself in Dayton, in advertising and selling. He is an old and capable hand at this game, and his colleagues wish him prosperity in it.

A. B. Creager Goes to U. S. Labor Office

A. B. Creager, assistant in the employment department, retired on January 31, and has accepted a position in the United States government labor office at Dayton.

Mr. Creager started with the District as Timekeeper at the Germantown feature, coming to the Employment office in May, 1918.

The scarcity of labor during war conditions made constant demands for strenuous effort in the seeking of men, and in making known the work of the District.

In all these efforts Mr. Creager was a willing and faithful worker, and we wish him success in his new job.

F. C. Williams Goes to New York

Word is received as we go to press that F. C. Williams, engineer in charge of the sewer work at Hamilton, has resigned his position with the District and will go to New York, where he will be associated with James Ferry & Sons, contractors.

The Miami River steam tug, to be used in pushing loaded scows of excavated material to the spoil banks and levees, and a picture of which was published in our last issue, was given a successful steam test on the river on February 20. A descriptive article on this tug, with plans, etc., will be printed in a later Bulletin.

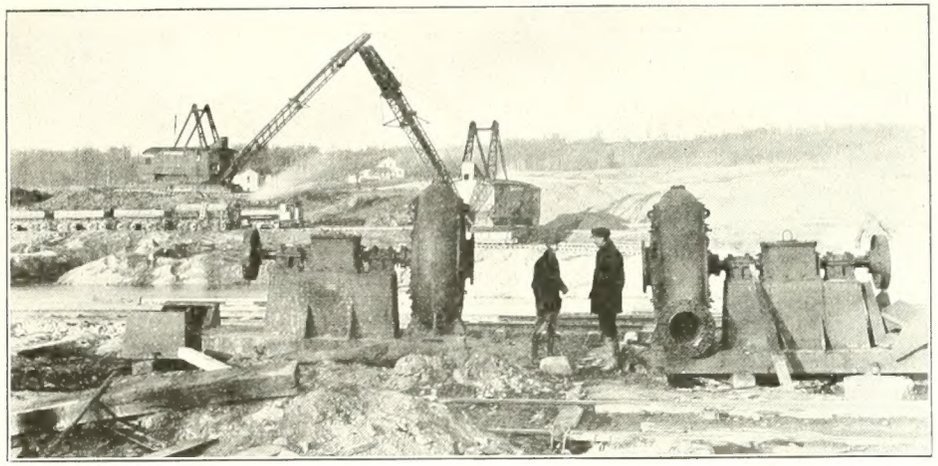


FIG. 110—DREDGE PUMPS, ENGLEWOOD, FEB. 5, 1919.

These are 15-inch centrifugal pumps, with a capacity of 7000 gallons per minute, run by electric motors, built by the Morris Machine Works. They will pump the mixed earth and water from a "sump" or pit to the hydraulic fill pool on top of the dam. The Stillwater river is seen just beyond. The dragline excavators across the river are cleaning out the river and preparing the damsite for the hydraulic fill.

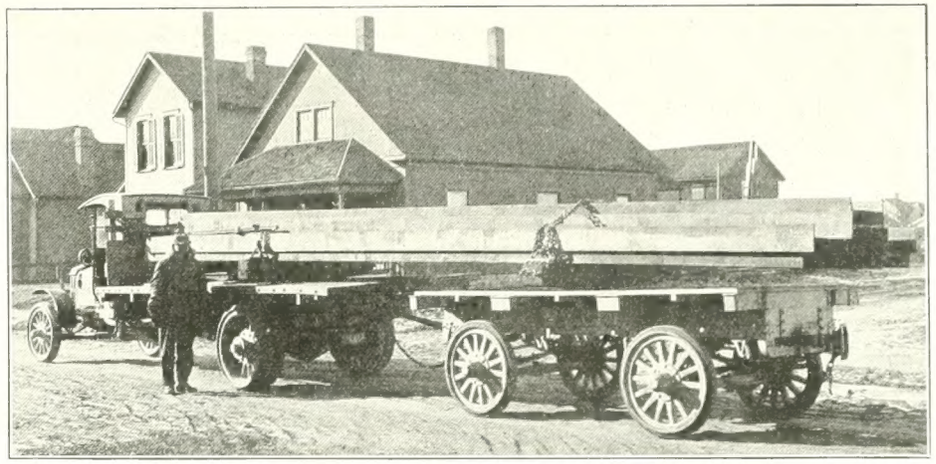


FIG. 111—TRUCK AND TRAILER, DAYTON, JAN. 9, 1919.

This shows a 5-ton truck with 5-ton trailer, loaded with four 20-inch I-beams 32 feet long. The beams weigh a ton apiece. They are intended for the construction railway trestle across the Stillwater river at Englewood, where they replace two bents of piles which have been removed to permit free passage for ice during the winter, a precaution taken to safeguard the trestle against damage.

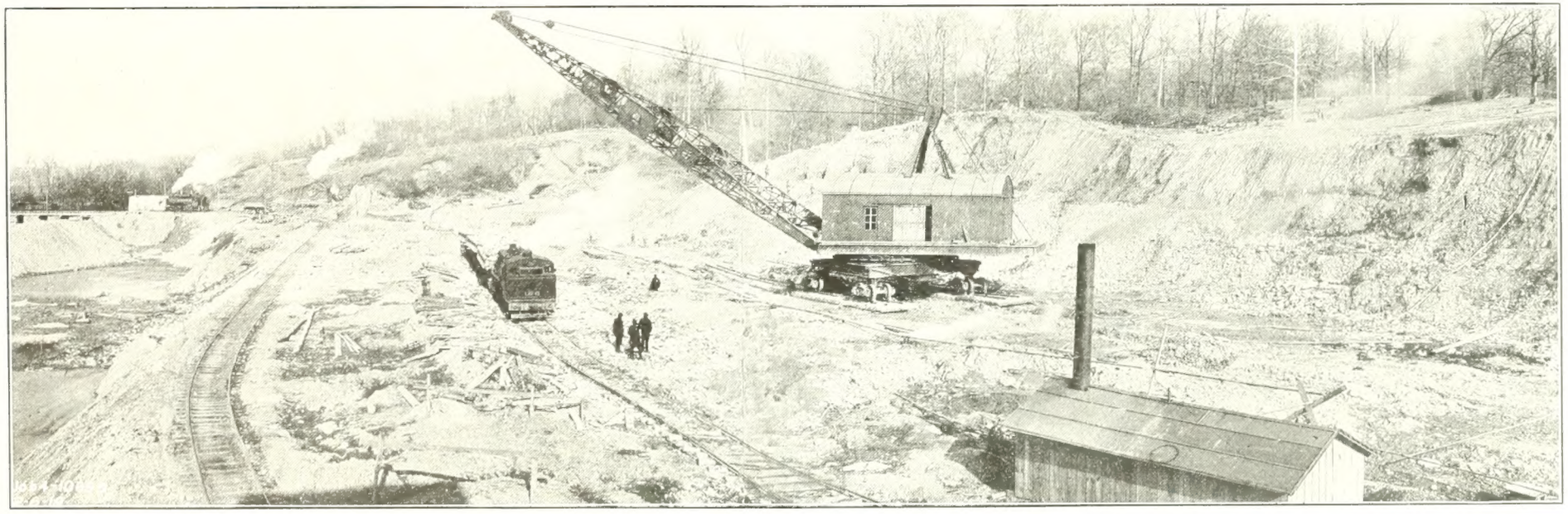


FIG. 112—EXCAVATION FOR OUTLET WORKS, TAYLORSVILLE, FEBRUARY 6, 1919.

The view is northerly from the top of the gravel washing plant (Fig. 107 was taken from the hill slope near the steam shovel, which is seen to the right of the locomotive in the distance, and looking southerly). The excavation, which is in rock, is being done by the big dragline in the foreground and the steam shovel just mentioned. The material is loaded into 12-yard dump cars drawn by 40-ton, standard gage, steam locomotives, and unloaded as described under Fig. 107.